"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, E. N.

Chem Abs.
V.48 25 Jan 54

Biological Chem.

CW

4

(3)

Change of the amino acid content of proteins of plastids in the process of life of an organism. N. M. Sisakyan, E. N. Bezinger, and N. A. Gumilevskaya. *Doklady Akad. Nauk S.S.S.R.* 91, 907–10(1953); cf. *ibid.* 86, 117(1952).

C.A. 47, 3904c.—In addn. to the previously found 17 amino acids in sugar-beet leucoplast protein (I), an 18th one is reported, isoleucine. A protein was isolated similarly from the beet-leaf chloroplasts; this contained 11.9% N. The protein isolated, as mentioned above, from the leucoplasts was compared with the protein (II) obtained by pptn. of an EtOH ext. with Me_2CO; this protein contained 10.3% N. II contains less arginine, leucine and isoleucine, threonine, and serine than I; II contains more lysine and glutamic acid than I. Cystine is almost absent in II. I behaves as a homogeneous substance in electrophoresis; II appears to be a mixt. Examn. of specimens from plants of different age showed the following. Age has no effect on aspartic and glutamic acids, alanine, and arginine in I, but serine, valine, tyrosine, leucine, isoleucine, and lysine decline, and threonine and cystine rise. Thus, age appears to effect structural changes in the protein matter. G. M. Kosolapoff

Inst. Biochem. im A.N. Bakh, AS USSR

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, E.M.

155. **Simple method of separating amino-acids by chromatography on paper.** N. M. Sisakyan, E. M. Bezinger, P. G. Garkavi and G. Ya. Kivman (*Dokl. Akad. Nauk, SSSR.*, 1954, **96** [2], 343–346).—Redfield's (*Biochim. Biophys. Acta*, 1953, **10**, 344) two-dimensional paper chromatographic method has been simplified and the size of the paper required reduced, by using a mixture of alcohol, water and pyridine (40:10:2) in one direction, and a mixture of *n*-butanol, ethyl methyl ketone, water and diethylamine (20:20:10:2) in the other, and developing the spots with ninhydrin. Twenty amino-acids can be separated on a sheet measuring 28 cm × 28 cm, and occasionally on one 14 cm × 14 cm. R_F values are reported for the acids separated. R. C. MURRAY

5

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

Amino-acid composition of phycoerythrin. N. M. Sisakyan, E. N. Bezinger, and F. R. Kivkutsan (*A. N. Bakh Biochem. Inst., Acad. Sci. U.S.S.R., Moscow*). *Doklady Akad. Nauk S.S.S.R.* 98, 111–14(1954).—Partition chromatography on paper (*C.A.* 45, 10279*h*; 48, 10821*h*) showed that phycoerythrin contains: aspartic and glutamic acids, glycine, alanine, valine, leucine, isoleucine, serine, threonine, tyrosine, phenylalanine, proline, histidine, lysine, arginine, cystine, methionine, α-aminobutyric acid, and γ-aminobutyric acid. Reproductions of the partitions are supplied.

G. M. Kosolapoff

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER E. N.

Investigation of amino acid composition of proteins of plastids by method of chromatography on paper. E. Bezinger. *Trudy Komissii Anal. Khim., Akad. Nauk S.S.S.R., Inst. Geokhim. i Anal. Khim.* 6, 467-77(1955); cf. Vecher, *Izvest. Akad. Nauk S.S.S.R. Ser. Biol.* 1939, 270; Crumpler and Dent, *C.A.* 44, 75*d*; Pereira and Serra, *C.A.* 45, 5750*c*.—The proteins from the chloroplasts of the leaves and the leucoplasts of the root of the sugar beet were studied and 20 amino acids were sepd. Changes of relative amts. of some amino acids were noted as the plants grew. Analyses done in August and December showed that threonine and cystine increased while leucine and serine decreased. The plastids were sepd. by V.'s method. This prepn. was dialyzed until there was no reaction for carbohydrates, then hydrolyzed 24 hrs. by HCl at weak boiling. HCl was removed *in vacuo* or in salting-out app. PhOH satd. with H_2O and a collidine-α-picoline mixt. (3:2) satd. with H_2O were solvents for 2-dimension chromatograms. In doubtful cases pure amino acids were added to the hydrolyzate and the spots from these coincided with the doubtful spots. Color was developed with ninhydrin. Special reagents were used for some sepd. amino acids. Chromatograms were also done on the protein fraction extd. from plastids by a 0.3% NaOH soln. in 60% alc. at 50°. γ-Aminobutyric acid was detd. by method of C. but it could have developed from decarboxylation of glutamic acid. Valine, leucine, isoleucine, and phenylalanine were also sepd. on a chromatogram with BuOH, and phenylalanine was sepd. by benzyl alc. satd. with H_2O. Norvaline and norleucine were absent. Cysteine-cystine was detected on chromatograms after oxidation of the hydrolyzate with H_2O_2. Tryptophan was identified after alk. hydrolysis on a chromatogram (in the system BuOH-H_2O) by reaction with *p*-dimethylaminobenzaldehyde. Aspartic and glutamic acids, serine, threo-

1/2

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, E.N., CRUMPLER & DENT...

nine, tyrosine, glycine, alanine, valine, leucine, isoleucine, histidine, γ-aminobutyric acid, lysine, arginine, proline, hydroxyproline, tryptophan, phenylalanine, cysteine-cystine, and methionine were sepd. An aq. plastid suspension, a acidified with HCl was extd. by 70–80% EtOH at 0°. When the pH of the alk. soln. was adjusted to 5.5–6.0 a component was isolated which was identical to the so-called Protein I isolated by Siskayan (*C.A.* 47, 3904c). Protein I was sol. in 70–80% alc. or 0.2–0.3% aq. alkali, insol. in H_2O and solns. of neutral salts, and was pptd. from 3–5% Cl_3CCOOH soln. It did not give fluorescence with Acridine Orange. It contained all the 20 acids listed above except tryptophan and hydroxyproline. Protein I was isolated and analyzed in August and again in Decem- b ber. By P's method 13 amino acids were dettd. E. M. 3/2

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

Bezinger, E.N

MD ✓ **The amino acid composition of the proteins of chloroplasts and leucoplasts in plant ontogeneais.** N. M. Sisakyan, E. N. Bezinger, N. A. Gumilevskaya, and N. F. Luk'yanova (A. N. Bakh Inst. Biochem., Acad. Sci. U.S.S.R., Moscow). *Biokhimiya* 20, 368-76(1955).—Study material consisted of roots and leaves of the sugar beet. Procedures are described for obtaining the plastids and for the sepn. and analysis of the proteins. Paper chromatographic methods were extensively employed. A lipoprotein was isolated at various stages of the sugar beet growth, having 4.8-6.7% of lipides depending upon the age of the plant. By means of partition chromatography 16 constituent amino acids were found in this protein: asparagine, glutamine, glycine, alanine, valine, leucine, isoleucine, serine, threonine, tyroxine, phenylalanine, proline, arginine, lysine, cystine, and methionine. In the leucoplastids quant. detns. were made of 13 and in the chloroplastids of 8 amino acids. Characteristic of the isolated plastid proteins is a high content of basic amino acids (arginine, lysine). The oxyamino acids and in some stages of the plant's development the S-contg. amino acid content of the leucoplast protein is also high. The amino acid content of this protein varies with the age of the plant. While the content of serine may be reduced by 6.8%, the content of cystine, threonine, and glycine may be increased by a total of 7.1%, possibly through the interconversion of some of these amino acids. The leucine content of sugar beet roots is notably reduced with age. The content of dicarboxylic amino acids, alanine, and arginine remains unchanged. It is noteworthy that in the chloroplast protein the amino acids which fluctuate quantitatively were identical with those of the leucoplasts which remained quantitatively const. (aspartic acid, alanine) and *vice versa* (serine, cystine, glycine). The arginine content of both proteins remained unchanged at all stages of the sugar beet growth.

B. S. Levine

(3)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, E. N.

SISAKYAN, N.M.; BEZINGER, E.N.

Relation of amino acids and their derivatives to the qualitative features of wine. Biokhim. vin. no.5:7-26 '57. (MLRA 10:6)

1. Institut biokhimii im. A.N. Bakha AN SSSR.
(Wine and wine making--Analysis)
(Amino acids)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZGMGER, E.N.; SISAKYAN, N.M.; SIMAKOVA, I.M.

Nitrogenous components of lipoids in plastid lipoproteins. Biokhimiia 24 no.5:876-884 S-O '59. (MIRA 13:2)

1. Institut biokhimii imeni A.N. Bakha Akademii nauk SSSR, Moskva.
(LIPIDS) (PLANTS--METABOLISM)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, E. N., SIMAKOVA, I. M.

"Amino Acids as Nitrogenous Components of the Lipoids of Plants."

report submitted for the First Conference on the problems of Cyto and Histochemistry, Moscow, 19-21 Dec 1960.

Laboratory of Enzymology of the Institute of Biochemistry Imeni A. N. Bakh, Academy of Sciences USSR, Moscow.

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, YE. N., and SIMAKOVA, I. M. (USSR)

"Amino Acids as Nitrogenous Components of Plant Lipids."

Report presented at the 5th International Biochemistry Congress, Moscow, 10-16 Aug 1961

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

S/020/61/141/003/021/021
B103/B101

AUTHORS: Sisakyan, N. M., Academician, Bezinger, E. N., and Marchukaytis, A. N.

TITLE: Participation of plastid lipoids in protein synthesis

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 141, no. 3, 1961, 748 - 750

TEXT: The bond between lipopeptide and protein molecule was studied to prove directly its participation in protein synthesis. Lipopeptides are located in cell structures where protein synthesis takes place. Hence, lipopeptides are assumed to participate in protein synthesis. Chloroplasts were isolated from 200 - 250 g of young bean leaves (Phaseolus) by fractional centrifuging with 3000 g of saccharose phosphate buffer (pH 7.1) at a maximum of 3 - 4°C. They were ground in a homogenizer in 20 milliliters of the buffer, and incubated in the presence of Mg^{2+} ions at room temperature and a pH of 7.0. 0.25 milliliters of glycine-1-C^{14} solution (corresponds to 328,000 imp/min) and 1 milliliter of chloroplast suspension were added to each sample. The inclusion was periodically interrupted by addition of 0.01 milliliters of 10% HCl (pH~1) and rapid cooling. Before adding a suspen-

Card 1/3

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

Participation of plastid...

sion, HCl was mixed with the control samples. After incubation, the test tubes were centrifuged the deposit was washed with water and extracted three times with a 75% alcohol (up to a pH of 4, acidified with HCl). Thus, the lipoproteid fraction was obtained from plastids. The following fractions were obtained: "lipoid I", "protein I", and "protein II" whose radioactivity was determined. Under the above-mentioned conditions, glycine-1-C^{14} was found to be included almost simultaneously in the lipoid and protein parts of lipoproteid. At a pH of 5.8, the inclusion of radioactive label in the lipoid part is independent of Mg^{2+}, whereas this inclusion is completely missing in the protein part without Mg^{2+}. Thus, it was shown that amino acids in isolated plant plastids were included in proteins with active participation of lipoids bound to proteins. Besides nucleic acids, lipoid substances are also assumed to take part in the activation and transport of amino acids. Their participation however, can be of a different nature; thus, especially lipoids may take part in the regulation of permeability processes. The studies are being continued. There are 1 figure, 2 tables, and 20 references: 9 Soviet and 11 non-Soviet. The three most recent references to English-language publications read as follows: G. B. Hunter, R. A. Goodsall, Biochem. J., 78, 961 (1961); T. Fukui, B. Axelrod,

Card 2/3

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

S/020/61/141/003/021/021
B103/B101

Participation of plastid...

Federat. Proc., 19, 6 (1960); T. Fukui, B. Axelrod, J. Biol. Chem., 236, 811 (1961).

SUBMITTED: August 23, 1961

Card 3/3

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

SISAKYAN, N.M.; BEZINGER, E.N.; SHAPOSHNIKOVA, M.G.

Amino acid composition of Chlorella pyreudoidosa. Probl.kosm. biol. 1:317-376 '62. (MIRA 15:12)
(ALGAE AS FOOD) (ASTRONAUTS—NUTRITION) (AMINO ACIDS)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

SISAKYAN, N. M., akademik; BEZINGER, E. N.; MARCHUKAYTIS, A. S. [Marcukaitis, A.]

Role of chloroplast lipoproteids in protein synthesis. Dokl. AN SSSR 147 no.6:1493-1494 D '62. (MIRA 16:1)

1. Institut biokhimii im. A. N. Bakha AN SSSR.

(Chromatophores) (Lipoproteins)
(Protein metabolism)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, E.N.; MOLCHANOV, M.I.; SISAKYAN, N.M., akademik

Inclusion of C^{14} amino [illegible] the phosphatide fraction separated by alkaline hydrolysis fr[illegible] [illegible]roplast lipoproteid. Dokl. AN SSSR 159 no.2:446-448 N '64. (MIRA 17:12)

1. Institut biokhimii im. A.N. Bakha AN SSSR.

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, E.N.; MOLCHANOV, M.I.; SISAKYAN, N.M.

Role of lipoid compounds in biosynthesis of chloroplast proteins. Biokhimiia 29 no.4:749-758 Jl-Ag '64. (MIRA 18:6)

1. Institut biokhimii imeni Bakha AN SSSR, Moskva.

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, E.N.; MOLCHANOV, M.I.; SISAKYAN, N.M., akademik

Biosynthesis of protein and nucleic acid in lamellae of bean chloroplasts. Dokl. AN SSSR 166 no.3:738-741 Ja '66. (MIRA 19:1)

1. Institut biokhimii im. A.N.Bakha AN SSSR. Submitted September 24, 1965.

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

MOLCHANOV, M.I., BAZHENOV, B.N.; SISAKYAN, N.M., akademik

Inclusion of C^{14} amino acids from phosphatidyl-amino acid compounds into lamellar chloroplast proteins. Dokl. AN SSSR 159 no.1:202-204 N '64. (MIRA 17:12)

1. Institut biokhimii im. A.N. Bakha AN SSSR.

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, E.N.; MOLCHANOV, M.I.; KOTOVSKAYA, A.P.; SISAKYAN, N.M., akademik

Isolation and characteristics of lipoproteins from bean chloroplasts. Dokl. AN SSSR 151 no.3:722-724 Jl '63. (MIRA 16:9)
(Lipoproteins) (Chromatophores)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

SISAKYAN, N.M., akademik; BEZINGER, E.N.; MOLCHANOV, M.I.

Effect of puromycin on the incorporation of amino acids into lipoids and proteins of chloroplasts. Dokl. AN SSSR 151 no.2: 449-451 Jl '63. (MIRA 16:7)

1. Institut biokhimii im. A.N.Bakha AN SSSR.
(Puromycin) (Chromatophores)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, N. N.

"Investigation in the Field of Beta-Amino Acids: New Synthesis of Alkyl Esters of Beta-Amino Acids and Their Reaction With Hydrazine Hydrate." Sub 28 Jun 51, Inst of Organic Chemistry, Acad Sci USSR.

Dissertations presented for science and engineering degrees in Moscow during 1951.

SO: Sum. No. 480, 9 May 55

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, N. N.

Chemical Abst.
Vol. 48 No. 8
Apr. 25, 1954
Organic Chemistry

Curtius reaction in the β-amino acid series. W. M. Rodionov and N. N. Beringer. *Bull. acad. sci. U.S.S.R., Classe sci. chim.* 1952, 647-68(Engl. translation).—See *C.A.* 47, 10501i. H. L. H. —

9-2-54

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

1. RODIONOV, V. M.; BEZINGER, N. N.

2. USSR (600)

4. Curtius Reaction

7. Curtius reaction with α-amino acids, Izv. AN SSSR. Otd. khim. nauk, No. 5, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February, 1953. Unclassified.

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

Bezinger, N.N.

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
Organic Chemistry

4 Chem

New synthesis of alkyl esters of β-amino acids. V. M. Rodionov and N. N. Bezinger. *Bull. Acad. Sci. U.S.S.R., Div. Chem. Sci.* 1952, 837–41(Engl. translation).—See C.A. 47, 10501e. H. L. H.

No. 4

MF

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

RODIONOV, V.M.; BEZINGER, N.N.

New synthesis of alkyl esters of β-amino acids. Izvest. Akad. Nauk S.S.S.R. Otdel. Khim. Nauk '52, 696-702. (MLRA 5:9)
(CA 47 no.20:10501 '53)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

RODIONOV, V.M.; BEZINGER, N.N.

Curtius reaction in the β-amino acid series. Izvest. Akad. Nauk S.S.S.R., Otdel. Khim. Nauk '52, 962-71. (MLRA 5:11)
(CA 47 no.20:10501 '53)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

AUTHORS: Gal'pern, G. D., Bezinger, N. N. SOV/79-13-5-19/24

TITLE: Determination of Primary, Secondary, and Tertiary Coexisting Amino Groups (Opredeleniye pervichnykh, vtorichnykh i tretichnykh amino grupp pri sovmestnom ikh prisutstvii)

PERIODICAL: Zhurnal analiticheskoy khimii, 1958, Vol 13, Nr 5, pp 603-607 (USSR)

ABSTRACT: There are several references on the separate determination of primary, secondary, and tertiary amines (Refs 1-5). One of these methods (Refs 4, 5) is based on the acidimetric titration. At first, the total content of amino groups in the mixture is determined. Then, the primary amino groups are bound by salicylaldehyde, forming Schiff's-bases, and the sum of the unchanged secondary and tertiary amino groups is determined by titration. In the third sample of the original mixture the primary and secondary amino groups are acetylated by means of acetic anhydride and the tertiary amino groups are titrated acidimetrically. The main difficulty of this method is the determination of the end point, because the alcohols used as solvents (isopropylalcohol and ethylene glycol) are very weak acids. Therefore the intensity of the bases is in these solvents somewhat

Card 1/4

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

Determination of Primary, Secondary, and Tertiary Coexisting Amino Groups

higher than in aqueous solution. In alcoholic solutions only such bases can be titrated the ionization constant of which is not below 10^{-7} - 10^{-8}. In subsequent papers (Refs 6-8) for the acidimetric titration of amines glacial acetic acid has been suggested as solvent. In this medium it is possible to titrate precisely amines with ionization constants up to 10^{-11} - 10^{-12}. In the titration with glacial acetic acid, however, the Schiff's-bases are co-titrated since they are in glacial acetic acid bases of the same intensity as the secondary and tertiary amines. The authors of the present paper used as solvent for the amines glacial acetic acid. The primary amino groups were quantitatively blocked by phthalic anhydride. Thus, the corresponding phthalimides are formed which show the same behaviour as neutral compounds in contrast with the Schiff's bases. The intensity and accuracy of the subsequent potentiometric titration of the secondary and tertiary amino groups with $HClO_4$ is not at all reduced by this process. The potential jump in the endpoint is nearly as large as in an acetic acid solution of amines in absence of phthalimides. The tertiary amines are quantitatively

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

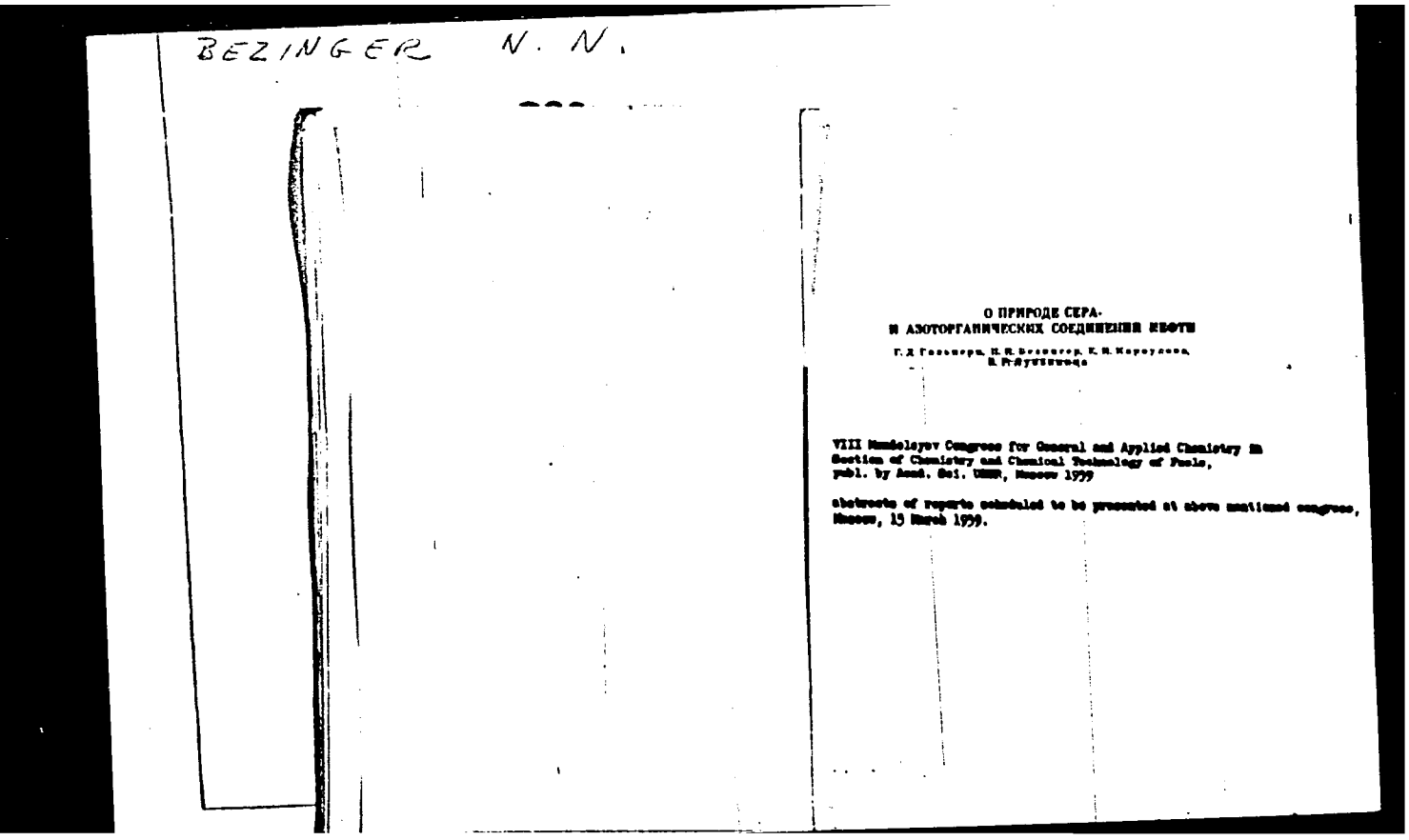
Determination of Primary, Secondary, and Tertiary Coexisting Amino Groups

determined after acetylation of the primary and secondary amino groups with acetic anhydride by potentiometric titration with $HClO_4$. The method under review was applied for the quantitative determination of primary amino groups in several aliphatic and aromatic amines and in 3-aminopyridine and 3-amino-quinoline; the results of these determinations are given. The error does as a rule not exceed 0,1%, if the nitrogen content is $>$ 10%. Amino groups in position 2 and 4 in pyridine-, quinoline- and thiazole derivatives react neither with phthalic anhydride nor with acetic anhydride and can therefore not be determined by the described method; the same applies to 2-aminothiazole. Details are given for carrying out the elaborated method of determination. There are 1 figure, 2 tables, and 10 references, 2 of which are Soviet.

ASSOCIATION: Institut nefti Akademii nauk SSSR, Moskva (Petroleum Institute AS USSR, Moscow)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7



BEZINGER N. N.

О ПРИРОДЕ СЕРА-
И АЗОТОРГАНИЧЕСКИХ СОЕДИНЕНИЯ ЯВОТИ

Г. Д. Гольберг, Н. Н. Безингер, К. Н. Корнеева, В. Ф. Дубовенко

VIII Mendeleyev Congress for General and Applied Chemistry
Section of Chemistry and Chemical Technology of Fuels,
publ. by Acad. Sci. USSR, Moscow 1959

abstracts of reports scheduled to be presented at above mentioned congress, Moscow, 15 March 1959.

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, N. N., OKOLENTSEV, B. D., GAI[illegible]RN, [illegible]. D., AIVAZOV, B. V., KARAULOVA, [illegible]. M., LUKANITSA, V. G., RATOVSKAYA, A. A., [illegible], V. D. (SECTION V)

"Composition of Sulfur- and Nitrogen-Organic Corpounds Contained in the Oil of the Eastern Areas in the Soviet Union."

Report to be submitted at the Fifth World Petroleum Congress, 30 May - 5 June 1959. New York.

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, N.N.

11(6) PHASE I BOOK EXPLOITATION SOV/2075

Akademiya nauk SSSR. Bashkirskiy filial, Ufa

Khimiya sernoorganicheskikh soyedineniy, soderzhashchikhsya v nefteyakh i nefteproduktakh; [materialy III simpoziuma, sessii] (Chemistry of Sulphur Organic Compounds Contained in Petroleums and Petroleum Products; [Papers of the Third Scientific Session]) Moscow, Izd-vo AN SSSR, 1959. 376 p. 2,000 copies printed. Errata slip inserted.

Editorial Board: R.D. Obolentsev (Resp. Ed.) Doctor of Chemical Sciences; G.D. Gal'pern, Doctor of Chemical Sciences; Ya. B. Chertkov, Doctor of Technical Sciences; V.F. Pesov, Candidate of Technical Sciences; and V.P. Fortsdtvenskiy, Candidate of Chemical Sciences; Ed. of Publishing House: I.I. Bronov; Tech. Ed.: T.P. Polenova.

PURPOSE: This book is intended for chemists, chemical engineers, and technicians specializing in the chemistry of petroleum.

COVERAGE: The book is a collection of papers presented at the Third Scientific Session on the Chemistry of Organic Sulfur and Nitrogen Compounds Contained in Petroleum and Petroleum Products. The scientific session was held in Ufa, June 3-6, 1957. The book consists of six sections: 1) Synthesis, characterization, and analysis of organic sulfur compounds; 2) Separation and composition of organic sulfur compounds contained in petroleum and petroleum products; 3) Transformation of organic sulfur compounds by thermal catalysis; 4) Corrosive properties of and the formation in sulfur-containing petroleum and petroleum products; 5) Uses of organic sulfur compounds and hydrogen sulfide; 6) Physiological properties of organic sulfur compounds. No personalities are mentioned. There are 315 references, of which 179 are Soviet, 118 English, 5 French, 12 German, and 1 Czech.

TABLE OF CONTENTS

Chemistry of Sulphur Organic Compounds (Cont.) SOV/2075

Obolentsev, R.D., A.A. Petrov[illegible]. Method of Group Determination of Organic Sulfur Compounds Proposed by BashFAN [Bashkir Branch, Academy of Sciences, USSR]

Fokeyev, N.M. A Laboratory Oscillographic Polarograph

Smirnov, N.N., G.D. Gal'pern, S.I. Savel'yanova. Determination of the Total and Basic Nitrogen in Petroleum and Petroleum Products

PART II. SEPARATION AND COMPOSITION OF ORGANIC SULFUR COMPOUNDS CONTAINED IN PETROLEUM AND PETROLEUM PRODUCTS

Romanov, I.P., V.P. Chuyko, A.I. Skobelitsa, O.I. Tolmacheva. Organic Sulfur Compounds Contained in the Wide Fractions of Kyl-Tumaksk and Chandag Petroleum

Smirnov, N.N. Study of the Nature of Organic Sulfur Compounds of Southern Tatarskiy Petroleum

Card 4/10

67

77

81

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

PHASE I BOOK EXPLOITATION SOV/4350

Sovetshchaniye po khimii, tekhnologii i primeneniyu proizvodnykh piridina i khinolina. Riga, 1957

Khimiya, tekhnologiya i primeneniye proizvodnykh piridina i khinolina; materialy sovetshchaniya (Chemistry, Technology and Utilization of Pyridine and Quinoline Derivatives; Materials of the Conference) Riga, Izd-vo AN Latviyskoy SSR, 1960. 299 p. Errata slip inserted. 1,000 copies printed.

Sponsoring Agencies: Akademiya nauk Latviyskoy SSR. Institut khimii Vsesoyuznoye khimicheskoye obshchestvo.

Ed.: S. Bachanova; Tech. Ed.: A. Klavinyn; Editorial Board: Yu. A. Bankovskiy, Candidate of Chemistry; Z. V. Yanaga, Candidate of Chemistry (Resp. Ed.); L. P. Zalukayev, Doctor of Chemistry; and M. M. Kalnyn'.

PURPOSE: This book is intended for organic chemists and chemical engineers.

COVERAGE: The collection contains 13 articles on methods of synthesizing or producing pyridine, quinoline, and their derivatives from natural sources. No personalities are mentioned. Figures, tables, and references accompany the articles.

TABLE OF CONTENTS:

I. PYRIDINE AND QUINOLINE DERIVATIVES OBTAINED FROM THE THERMAL CRACKING PRODUCTS OF FUELS

Petukhova, M. M. [Institute Chemistry, Academy of Sciences Latvian SSR]. Synthesis of Pyridine Bases From Coal Tar 7

Gilenitis, Bases Obtained From Coal Tar

Dubrova, A. D. [Yaroslavl Technological Institute]. Fractional Distillation of Pyridine Bases

[illegible] Academy of Sciences USSR]. Extraction and Utilization of Nitrogeneous Tar Bases From the Smelting of Chemekhovo Coal 25

Kuznetsov, V. I., and A. P. Fateyeva [Institut teploenergetiki Akademii nauk USSR (Heat Power Engineering Institute of the Academy of Sciences USSR)]. The Content of Pyridine Bases in Tars From the Thermal Decomposition of Lignites From the Dnepr Basin 37

Petrova, L. A., and O. Ya. Vanag [Institut khimii Akademii nauk Latviyskoy SSR (Chemical Institute of the Academy of Sciences Latvian SSR)]. Pyridine Bases From Sapropelite Tar 43

[illegible] Academy of Sciences USSR (Petroleum Institute of the Academy of Sciences USSR)]. Methods of Determination and the Characteristics of Total Nitrogen and Nitrogenous Bases in Petroleums 55

Kostyuk, V. A. [Institut gornykhimicheskogo syr'ya Akademii nauk SSSR (Institute for Mineral Fuels of the Academy of Sciences USSR)]. Separation of the β-Picoline Fraction of Tar by the Selective Extraction Method 69

Brzhitskiy, A., and S. Malyanovskiy [Physical Chemistry Institute of the Polish Academy of Sciences; Institute for General Chemistry (Warsaw)]. Physicochemical Studies in Pyridine Bases From Products of the Chemical Processing of Coal 75

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, N.N.; GAL'PERN, G.D., doktor khimicheskikh nauk; OVECHKINA, T.I.

Determination of nitrogen in crude oils and petroleum products by the Dumas micromethod. Metod.anal.org.soed.nefti,ikh smes. i proizv. no.1:132-140 '60. (MIRA 14:8)
(Nitrogen--Analysis) (Petroleum products)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, N.N.; GAL'PERN, G.D., doktor khimicheskikh nauk

Functional analysis of nitrogen bases and amines and group analysis of petroleum nitrogen compounds. Metod.anal.org. soed.nefti,ikh smes. i proizv. no.1:141-169 '60. (MIRA 14:8)
(Petroleum--Analysis) (Nitrogen compounds)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, N.N.; GAL'PERN, G.D.

Development of methods for the identification of basic and non-basic nitrogen organic compounds in crude oils. Khim.sera-i azotorg.soed.sod.v neft.i nefteprod. 3:139-148 '60. (MIRA 14:6)

1. Institut neftekhimicheskogo sinteza AN SSSR.
(Petroleum--Analysis) (Nitrogen compounds)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

S/081/61/000/012/027/028
B103/B202

AUTHORS: Bezinger, N. N., Gal'pern, G. D.

TITLE: Functional analysis of the nitrogenous bases and amines and group analysis of the nitrogenous petroleum compounds

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 12, 1961, 533, abstract 12M243. (Metody analiza organ. soyedineniy nefti, ikh smesey i proizvodnykh. I. M., AN SSSR. 1960, 141-169)

TEXT: The authors devised a group analysis of the nitrogenous petroleum compounds (NC) which permits classification of these compounds into the following three groups: 1) free bases; 2) neutral NC (mainly amides and nitrides) which are reduced to bases by means of $LiAlH_4$; 3) neutral NC which cannot be reduced to bases by means of $LiAlH_4$. The content of free bases is determined by potentiometric titration of the petroleum solution (or of the petroleum product) in the mixture $CH_3COOH + C_6H_5Cl$ (usual ratio of the weighed portion: $CH_3COOH : C_6H_5Cl$, 1 : 1 : 1) with $HClO_4$. To determine the

Card 1/3

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

Functional analysis of the nitrogenous ...

total content of NC of the first and second group the weighed portion of petroleum (50-60 g) is reduced with $LiAlH_4$ by the method of Fingold (J. Am. Chem. Soc., 1947, 69, 1199). Subsequently, the content of free bases is determined. The NC content of the third group is determined as the difference between the total N content (on the basis of elementary analysis) and the N content of NC of the first and second group. The NC of the first and second group are divided into three subgroups: primary, secondary, and tertiary amines by treating the weighed portions of the petroleum and of the reduced petroleum with: 1) phthalic anhydride which forms neutral phthalimides with the primary amines, and with subsequent potentiometric titration of the remaining bases with $HClO_4$; 2) acetic anhydride which forms neutral compounds with primary and secondary amines, and with subsequent potentiometric titration of the remaining bases with $HClO_4$. The authors mention a group analysis of the NC of 12 petroleums of the USSR and 8 products (resins and their fractions) of coal and peat processing. The maximum NC content was found in the petroleum of the Okha deposit (referred to petroleum in %): total 0.39, first group 0.173 (only tertiary amines), second group 0.172, among them such from which the following products were

Card 2/3

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

Functional analysis of the nitrogenous ...

obtained by reduction: primary amines 0.014, secondary amines 0.019, and tertiary amines 0.139. Furthermore, a method was suggested for the differential determination of the sum: aliphatic amines + hydrated nitrogenous bases, and the sum: aromatic amines + unsaturated heterocyclic bases, by potentiometric titration of the solution of the NC mixture in dioxane or in dioxane + acetonitrile with $HClO_4$. 40 references.
[Abstracter's note: Complete translation.]

Card 3/3

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

ABDURAKHMANOV, M.A.; BEZINGER, N.N.; GAL'PERN, G.D.

Determination of sulfide sulfur in solutions containing sulfur-nitrogen compounds. Nature of the sulfur in extracts of petroleum bases. Uzb. khim. zhur. no.1:77-79 '61. (MIRA 14:1)

1. Institut neftekhimicheskogo sinteza AN SSSR i Institut khimii AN UzSSR.
(Sulfur--Analysis) (Sulfide)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, N.N.; ABDURAKHMANOV, M.A.; GAL'PERN, G.D.

Nitrogen compounds of petroleum. Report No.1. Nature of neutral nitrogen compounds. Neftekhimiia 1 no.1:23-28 Ja-F '61. (MIRA 15:2)

1. Institut neftekhimicheskogo sinteza AN SSSR.
(Nitrogen compounds) (Petroleum)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, N.N.; ABDURAKHMANOV, M.A.; GAL'PERN, G.D.

Nitrogen compounds of petroleum. Report No.2. Separation of nitrogenous bases of petroleum from organic sulfides. Neftekhimiia 1 no.2:149-155 Mr-Ap '61. (MIRA 15:2)

1. Institut neftekhimicheskogo sinteza AN SSSR.
(Nitrogen compounds)
(Petroleum) (Sulfides)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, N.N.; GAL'PERN, G.D.; ABDURAKHMANOV, M.A.

Use of acetic anhydride as a differentiating solvent for a selective acidimetric titration of amines, sulfoxides, and amides. Zhur. anal. khim. 16 no. 1:91-95 Ja-F '61. (MIRA 14:2)

1. Institute of Petroleum Chemical Synthesis, Academy of Sciences, U.S.S.R., Moscow.
(Acetic anhydride) (Amines) (Sulfoxides) (Amides)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

31894
S/081/62/000/003/075/090
B171/B101

11.1265
11.1240
5.3300

AUTHORS: Bezinger, N. N., Cal'pern, G. D.

TITLE: Development of methods for characterizing basic and neutral nitrogen-organic compounds contained in petroleum

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 3, 1962, 495, abstract 3M239 (Sb. "Khimiya sera- i azotorgan. soyedineniy, soderzhashchikhsya v neftyakh i nefteproduktakh". v. 3. Ufa, 1960, 139-148)

TEXT: A plan was worked out for a group analysis of nitrogen compounds (N. C.) contained in petroleum using the $LiAlH_4$ method of petroleum reduction (RZhKhim., 1961, 12M243). By the plan 3 groups of N. C. are distinguished: (1) free bases; (2) neutral N. C., reduceable by $LiAlH_4$, which are basically amides of acids; (3) residual N. C. including pyrroles, indoles, carbazoles and their complex derivatives. Each of the first two groups is subdivided in 3 subgroups: primary, secondary and tertiary amine- or amide groups. The free bases can also be again

Card 1/2

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

Development of methods for ...

S/081/62/000/003/075/090
B171/B101

subdivided into saturated and unsaturated N. C. by potentiometric titration in acetonitrile or in a mixture of acetonitrile and of dioxane medium. Analyses of petroleums according to the proposed plan are given in the article. It has been found that in the free bases group only the tertiary amines are present and that the $LiAlH_4$ reduction gives principally tertiary amines and only a small quantity of secondary and primary amines. [Abstracter's note: Complete translation.]

Card 2/2

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, N.N.; ABDURAKHMANOV, M.A.; GAL'PERN, G.D.

Nitrogen compounds of petroleum. Part 3: Neutral nitrogen compounds of Sakhalin oil of the Ekhabi field. Neftekhimiia 1 no.5:583-588 S-O '61. (MIRA 15:2)

1. Institut neftekhimicheskogo sinteza AN SSSR.
(Ekhabi region—Petroleum—Analysis)(Nitrogen compounds)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, N.N.; ABDURAKHMANOV, M.A.; GAL'PERN, G.D.

Nitrogen compounds of petroleum. Part 4: Group separation of concentrates of nitrogen bases. Neftekhimiia 1 no.5:589-598 S-O '61. (MIRA 15:2)

1. Institut neftekhimicheskogo sinteza AN SSSR.
(Petroleum--Analysis)(Nitrogen compounds)(Bases(Chemistry))

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

KLIGER, G.A.; BASHKIROV, A.N. LYUY GUAN-YUY [Lü Kuang-yü]; LESIK, O.A.; BEZINGER, N.N.; KAGAN, Yu.B.

Method of analyzing products of reaction between aliphatic alcohols and alkyl amines. Neftekhimia 2 no.1:121-126 Ja-F '62. (MIRA 15:5)

1. Institut neftekhimicheskogo sinteza AN SSSR.
(Alcohols) (Amines)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZINGER, N.N.; OVECHKINA, T.I.; GAL'PERN, G.D.

Determination of nitrogen in aromatic nitro- and polynitro compounds by the Kjeldahl micromethod. Zhur.anal.khim. 17 no.8:1027-1028 N '62. (MIRA 15:12)

1. Institute of Petroleum Chemical Synthesis, Academy of Sciences, U.S.S.R., Moscow.
(Nitrogen—Analysis) (Nitro compounds)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

KLIGER, G.A.; BASHKIROV, A.N.; BEZINGER, N.N.; KAGAN, Yu.B.

Method for analyzing products obtained by the interaction of aliphatic alcohols with ammonia in the presence of hydrogen. Neftekhimia 1 no.3:397-402 My-Je '61. (MIRA 16:11)

1. Institut neftekhimicheskogo sinteza AN SSSR.

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

NUMANOV, I.U.; GAL'PERN, G.D.; KARAULOVA, Ye.N.; BEZINGER, N.N.; [illegible], V.P.; SKOBELINA, A.I.; [illegible], T.V.

Composition, properties, and methods of extraction of heteroatomic components from the petroleums of southern Central Asia. Izv. AN Turk. SSR.Ser. fiz.-tekh., khim. i geol.nauk no.6:31-35 '63. (MIRA 18:1)

1. Khimicheskiy institut AN Tadzhikskoy SSR.

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

GAL'PERN, G.D.; BEZINGER, N.N.

Reply to the remarks by E.IU. Khmel'nitskaia and E.A. Gribova concerning the article by G.D. Gal'pern and N.N. Bezinger. Zhur. anal. khim. 19 no.11:1418 '64.

(MIRA 18:2)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZJAK, I.

"Rationalization in the light of quantitative equations." p. 81 (ELEKTROTEHNIŠKI VESTNIK, Vol. 21, no. 3/4, 1953, Ljubljana.)

SO: Monthly List of East European Accessions, Vol. 2, #9, Library of Congress August, 1953, Uncl.

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZIRGANAYAN, P. A.

USSR/Physics - X-Ray Diffraction 1 Feb 52

"Diffraction of X-Rays on Bent Crystals. Kinematic Theory - the Case of Passage," I. B. Borovskiy and P. A. Bezirganayan, Phys Faculty, Moscow State U

DAN SSSR, Vol 88, No 4, pp 639-642

Diffraction by bent two-dimensional crystals was analyzed by V. A. Fok and V. A. Kolpinskiy (see ZhETF 10 (1940)). Author presents results of kinematic theory of interference of X-rays in a general case of a three-dimensional bent crystal under specified conditions. Presented by Acad A. A. Lebedev 6 Nov 52.

249T51

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

USSR/Physics - X-Ray Diffraction 11 Feb 53

"Diffraction of X-Rays on Bent Crystals. Kinetic Theory - The Case of Reflection," I. B. Boroskiy and P. A. Bezirganyan, Moscow State U

DAN SSSR, Vol 88, No 5, pp 769-772

Refer to their previous (DAN SSSR, 88, No 4, 1953) construction of a kinetic theory of X-ray diffraction for the case of passage through, which corresponds to the disposition of the source of radiation on the convex side of the bent crystal, but the conditions for max interference are for

258T110

radiation that has passed through the crystal. In the present work the authors construct a similar soln, but for the case of reflection, where the source of radiations and interference maxima are disposed on one concave side of the bent crystal. Obtain an expression for the wave reflected from a three-dimensional curved crystal. Presented by Acad A. A. Lebedev 14 Nov 52.

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BOROVSKIY, I.B.; BEZIRGANYAN, P.A.; LEBEDEV, A.A., akademik.

Diffraction of X-rays by curved crystals; integral intensity of reflection for the "path" method. Dokl.AN SSSR 92 no.6:1129-1132 O '53. (MLRA 6:10)

1. Akademiya nauk SSSR (for Lebedev). 2. Institut metallurgii im. A.A.Baykova Akademii nauk SSSR (for Borovskiy and Bezirganyan).
(Crystallography, Mathematical) (X-rays--Diffraction)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZIRGANYAN, P. A.
X-Rays

Dissertation: "Some Questions on the Theory of X-Ray Interference on Curved and Plane Crystals." Cand Phys-Math Sci, Moscow Order of Lenin State U imeni M. V. Lomonosov, 31 Mar 54. (Vechernyaya Moskva, Moscow, 19 Mar 54)

SO: SUM 213, 20 Sep 1954

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZIRGANYAN, P.H.

1548

PRODUCTION OF LARGE SINGLE CRYSTALS OF ALUMINUM OF GIVEN ORIENTATION. N. S. Andreeva and P. A. Bezirganyan. Zhur. Tekh. Fiz. 24, 1876-8(1954) Oct. (In Russian)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BOROVSKIY, I.B.; BEZIRGANYAN, P.A.

X-ray diffraction by bent crystals. Nauch.trudy Erev.un. 48 no.2: 79-91 '55. (X-ray crystallography) (MLRA 9:9)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZIRGANYAN, P. A.

B. T. R.
Vol. 3 No. 4
Apr. 1954
Physics

3623 Diffraction of X-Rays in Bent Crystals, Kinematic Theory for the Case of Transmission and Reflection. I. B. Borovsky and P. A. Bezirganyan. *National Science Foundation Translation, no. 55-56*, Aug. 1953, 8 p. (Original in *Doklady Akademii Nauk* SSSR, v. 88, 1953, p. 659-662, 769-772.)

Reports results developed on basis of kinematic theory of X-ray interference for general case of a three-dimensional bent crystal. Graphs. 3 ref.

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZIRGANYAN, P.A.

Category : USSR/Solid State Physics - Structural Crystallography E-3

Abs Jour : Ref Zhur - Fizika, No 3, 1957, No 6525

Author : Borovskiy, I.B., Bezirganyan, P.A.
Title : Diffraction of X-rays Using Bent Crystals.

Orig Pub : Nauch. tr. Yerevansk. Sm. RZhKhim, 1956, 64287.

Abstract : See Referat Zhur Khimiya, 1956, 64287.

Card : 1/1

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BOZIRGANYAN, P.A.

Category : USSR/Solid State Physics - Structurel Crystallography E-3

Abs Jour : Ref Zhur - Fizika, No 3, 1957, No 6525

Author : Borovskiy, I.B., Bozirgenyan, P.A.
Title : Diffraction of X-rays Using Bent Crystals.

Orig Pub : Nauch. tr. Yerevansk. Sm. RZhKhim, 1956, 64287.

Abstract : See Referat Zhur Khimiya, 1956, 64287.

Card : 1/1

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZIRGANYAN, P.A.

Dynamic theory of the interference of X rays for a finite crystal. Dokl.AN Arm.SSR 29 no.5:223-230 '59. (MIRA 13:6)

1. Yerevankiy gosudarstvennyy universitet. Predstavleno akademikov V.A. Ambartsumyanom.
(Interference (Light))

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

S/022/60/013/01/07/010
C 111/ C 333

AUTHOR: Bezirganyan, P. A., Borovskiy, J. B.

TITLE: The Dependence of the Intensity of Reflected Roentgen Waves on the Magnitude of the Reflecting Monocrystal

PERIODICAL: Izvestiya Akademii nauk Armyanskoy SSR. Seriya fiziko-matematicheskikh nauk, 1960, Vol. 13, No. 1, pp. 121-140

TEXT: A detailed investigation of existing theories leads the authors to the following statements: The kinematic theory of interference of X rays due to Laue is applicable only for crystals, the dimensions of which are smaller than the first Fresnel zone. The dynamic theory of Darwin is only valid for crystals, the dimensions of which are much greater than the first Fresnel zone. The correction of Darwin of the primary extinction takes into account only the dependence of the intensity of reflected waves on the thickness of the crystal, and therefore it is inexact for crystals the reflecting surfaces of which are smaller than 10^{-2}cm. The decrease of the intensity of reflected X rays with increase of the reflecting surfaces can also be partially explained by the kinematic theory. In the dynamic theory of Darwin the coefficient

Card 1/2

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

S/022/60/013/01/07/010
C 111/ C 333

The Dependence of the Intensity of Reflected Roentgen Waves on the Magnitude of the Reflecting Monocrystal

of refraction for crystals with dimensions $< 10^{-2}$cm is given inexactly. By a correction the theory of Darwin can be made applicable for crystals of arbitrary size.

There are 5 figures, and 10 references: 6 Soviet, 3 English and 1 German.

ASSOCIATION: Yerevanskiy gosudarstvennyy universitet;Institut metallurgii imeni A. A. Baykova AN SSSR (Yerevan State University; Institute of Metallurgy imeni A. A. Baykov AS USSR)

SUBMITTED: May 8, 1959

Card 2/2

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

S/022/60/013/002/004/007
C 111/ C 333

AUTHORS: Bezirganyan, P. A., Akritov, A. G.

TITLE: The Dependence of the Intensity of Reflected Roentgen Waves on the Form of the Reflecting Crystal

PERIODICAL: Izvestiya Akademii nauk Armyanskoy SSR. Seriya fiziko-matematicheskikh nauk, 1960, Vol. 13, No. 2, pp. 115-122

TEXT: The authors consider two cases:

Case I. The crystal is bounded by the planes $y = \pm \frac{B}{2}$, $z = \pm \frac{C}{2}$, in the x direction the crystal is long compared with the first Fresnel zone so that it can be assumed to be infinite.

Case II. The crystal is bounded by $x = \pm \frac{A}{2}$, $z = \pm \frac{C}{2}$ and infinite in the y-direction.

In both cases a plane monochromatic wave falls the crystal in the direction of a vector situated in the xz-plane. The relative intensity S_o/T_o of the reflected waves is calculated, where S_o and T_o are the amplitudes of the reflected and of the incoming wave. It is stated that the relative intensity is essentially smaller in the second case, e. g. for B or A = 10^{-3}cm the maximum of

Card 1/2

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

S/022/60/013/002/004/007
C 111/ C 333

The Dependence of the Intensity of Reflected Roentgen Waves on the Form of the Reflecting Crystal

$\left|\frac{S_o}{T_o}\right|^2$ is equal to 0.99 in case I and equal to 0.44 in case

II. The stated effect can be explained neither with the kinematic theory of interference of X rays nor by the dynamic theory of Darwin - Ewald - Lane.

There are 7 figures, and 2 Soviet references.

ASSOCIATION: Yerevanskiy gosudarstvennyy universitet (Yerevan State University)
Armyanskiy rel'sko-khozyaystvennyy institut (Armenian Agricultural Institute)

SUBMITTED: September 24, 1959

Card 2/2

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

S/022/60/013/004/003/004
C111/C222

AUTHOR: Bezirganyan, P.A.

TITLE: The Exactness of the Focusing of X-Rays by Curved Crystals (Method of the Cut Crystal)

PERIODICAL: Izvestiya Akademii nauk Armyanskoy SSR. Seriya fiziko-matematicheskikh nauk, 1960, Vol.13, No.4, pp.59-64

TEXT: In his paper on the focusing of waves reflected by crystals, Du Mond (Ref.1) states that for an application of the method of Johanson the width of spectral lines is independent of the length of the reflecting crystal and that there a point focusing is reached. In the present paper the author shows that in all cases of a horizontal focusing of X-rays with the aid of curved crystals (also for the method of Johanson) the width of the spectral line depends on the length of the reflecting part of the crystal and on the thickness of the crystal. A point focusing and the independence of the length of the crystal are reached only in the case of an infinitely thin crystal. The author gives explicit formulas. There are 2 figures, 1 table and 3 references: 2 Soviet and 1 American.

ASSOCIATION: Yerevanskiy gosudarstvennyy universitet (Yerevan State University)

SUBMITTED: October 9, 1959

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

S/022/60/013/005/007/008
C111/C222

9.3700 (also 1006, 1144, 1155)

AUTHORS: Bezirganyan, P.A, and Akritov, A.G.

TITLE: The Dependence of the Intensity of Reflected Roentgen Waves on the Form of the Reflecting Crystal (Case of the Absorbing Crystal)

PERIODICAL: Izvestiya Akademii nauk Armyanskoy SSR. Seriya fiziko-matematicheskikh nauk, 1960, Vol. 13, No. 5, pp. 65 - 71

TEXT: The paper is a continuation of (Ref. 1) where the same problem was considered for the case of a non-absorbing crystal. The authors investigate the dependence of the intensity of reflected Roentgen waves on the orientation of the plane of incidence with respect to a crystal which is unbounded in one direction and bounded in two directions. Two cases are considered : 1) the inciding wave lies in the xz-plane and the crystal is infinitely extended ($\infty \times B \times C$) in the x-direction; 2) the inciding wave lies in the xz-plane and the crystal is infinitely extended ($A \times \infty \times C$) in the y-direction. With the notations of (Ref. 1,2) the authors obtain the same expression for the intensity of the reflected waves in both cases :

$$\left| \frac{S_o}{T_o} \right|^2 = \frac{\left[G_o'\right]^2 + \left[G_o''\right]^2}{U + V + W} ,$$

Card 1/5

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

S/022/60/013/005/007/008
C111/C222

The Dependence of the Intensity of Reflected Roentgen Waves on the Form of the Reflecting Crystal (Case of the Absorbing Crystal)

where

$$U = \left[dk(\vartheta - \vartheta_0)\cos\vartheta_0 - \Sigma_0''\right]^2 + \left[\Sigma_0'\right]^2$$

$$W = \sqrt{L_1^2 + L_2^2}$$

$$V = 2\sqrt{UW}\cos(\varphi_1 - \varphi_2) \quad .$$

Here φ_1, φ_2 are calculated from

$$\operatorname{tg}\varphi_1 = \frac{\Sigma_0'}{dk(\vartheta - \vartheta_0)\cos\vartheta_0 - \Sigma_0''} \quad , \quad \operatorname{tg}\varphi_2 = \frac{L_1}{L_2}$$

where

$$L_1 = 2\Sigma_0'\left[dk(\vartheta - \vartheta_0)\cos\vartheta_0 - \Sigma_0''\right] + 2G_0'G_0''$$

$$L_2 = \left[dk(\vartheta - \vartheta_0)\cos\vartheta_0 - \Sigma_0''\right]^2 + \left[G_0'\right]^2 - \left[\Sigma_0'\right]^2 - \left[G_0''\right]^2$$

Card 2/ 5

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

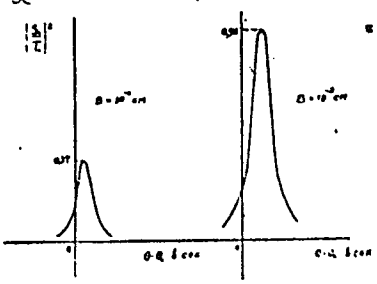
S/022/60/013/005/007/008
C111/C222

The Dependence of the Intensity of Reflected Roentgen Waves on the Form of the Reflecting Crystal (Case of the Absorbing Crystal)

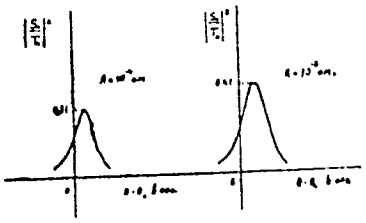
The G_o' , G_o'' , $\sum_o'$, $\sum_o''$, however, have different values in both cases.

The figures 4 and 5 show the results of the calculations for a calcite-crystal for an M_o K_α - radiation

Fig. 4 and 5



Фиг. 4.



Фиг. 5.

By a discussion of the results it is stated : If the first Fresnel's zone

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

S/022/60/013/005/007/008
C111/C222

The Dependence of the Intensity of Reflected Roentgen Waves on the Form of the Reflecting Crystal (Case of the Absorbing Crystal)

is greater than, or of the order of the reflecting planes (size of the crystal $10^{-4} \div 10^{-5}$ cm) then the intensity of the reflected waves (as in the non-absorbing case) depends strongly on the orientation of the plane of incidence for a given Wulf - Bregg's angle and a given system of reflecting planes (fig. 4 and 5). For a turn of the reflecting planes around their normals the intensity of the reflecting waves reaches its maximum if the projection of the direction of the inciding wave onto the reflecting plane is parallel to the long edge of the crystal. The dependence of the intensity on the orientation for a given wave length is the greater the smaller the Wulf - Bregg's angle is.
There are 5 figures and 2 Soviet references.

[Abstracter's note: (Ref. 1) is a paper of the authors in Izvestiya Akademii nauk Armyanskoy SSR. Seriya fiziko-matematicheskikh nauk, 1960, Vol. 13, No. 2. (Ref. 2) is a paper of Bezirganyan in Doklady Akademii

Card 4/5

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

S/022/60/013/005/007/008
C111/C222

The Dependence of the Intensity of Reflected Roentgen Waves on the Form of the Reflecting Crystal (Case of the Absorbing Crystal)

nauk Armyanskoy SSR, 1959, Vol 29, No. 5]

ASSOCIATION: Yerevanskiy gosudarstvennyy universitet
Armyanskiy sel'skokhozyaystvennyy institut
(Yerevan State University ; Armyanskaya Agricultural Institute)

SUBMITTED: January 4, 1960

Card 5/5

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZIRGANYAN, P.A.

Dynamic theory of the interference of X rays for a finite crystal. Dokl. AN Arm. SSR 31 no. 4:227-232 '60. (MIRA 13:12)

1. Yerevanskiy gosudarstvennyy universitet. Predstavleno akademikom V.A. Ambartsumyanom.
(Interference (Light)) (X rays)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

32391
S/022/61/014/006/002/004
D299/D301

24.7200 (1153, 1160)

AUTHORS: Bezirganyan, P. A. and Akritov, A. G.

TITLE: Study of increase in the intensity of waves, reflected by bent crystals

PERIODICAL: Akademiya nauk Armyanskoy SSR. Izvestiya, v. 14, no.6, 1961, 99-110

TEXT: The increase in intensity of X-ray beams, reflected by bent crystals, can be explained by the focussing property of the bent crystal analyzer. Two problems are considered: 1) The bending mechanism of the crystal analyzer and 2) the nature of focussing of waves, reflected by the bent crystal. The problems are considered from a theoretical point of view. The intensity of the waves, reflected by a bent crystal, is compared with the intensity of waves reflected by a plane crystal. Formulas are derived for the first Fresnel zone. The calculated dimensions of the first Fresnel zone are listed in a table. Assuming that the crystal is ideally bent, it is possible to use the tabulated values for comparing the wave

Card 1/3

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

Study of increase ...

intensities. It was found that, on bending, the crystal analyzer decomposes into optically independent crystal blocks. Infact, only if the crystal consists of optically independent parts can the intensity of reflection increase with the increasing active surface of the crystal analyzer (for a point source). Hence the conclusion that the increase in intensity of reflection by a bent crystal is not due to interference effects, but to a simple increase in the reflecting part of the crystal. The intensity (at the focus) of the X-ray spectrograph is the sum of the intensities of the individual parts of the active reflection-surface. With a point source, the size of the reflecting part of a bent crystal is larger (by 1 - 2 orders) than the analogous part of a plane crystal which explains the large increase in intensity of reflection by the bent crystal. An example is considered which yields for the ratio of active surface of bent crystal to that of a plane crystal the formula

Card 2/3

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

Study of increase ...

$$\frac{l_b}{l_p} = \frac{\text{arc sin}\left(\frac{bc \pm \sqrt{a^2 + b^2 - c^2}}{a^2 + b^2}\right)}{\sin\theta \operatorname{ctg}\beta\,(\sin\theta - \cos\theta \operatorname{tg}\beta)} \approx 72 \qquad (3.3)$$

Thus, the active part of a bent crystal increases by nearly 2 orders of magnitude. This is in good agreement with experimental results. The above computations were carried out within the framework of kinematic theory of interference of X-rays; a treatment by dynamic theory would, however, not yield any additional results. There are 12 figures, 1 table and 8 Soviet-bloc references.

ASSOCIATION: Yerevanskiy gosudarstvennyy universitet (Yerevan State University); Armyanskiy sel'skokhozyaystvennyy institut (Armenian Agricultural Institute)

SUBMITTED: February 21, 1961

Card 3/3

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

35304
S/022/62/015/001/004/007
D237/D301

9,6150

AUTHORS: Akritov, A. G. and Bezirganyan, P. A.

TITLE: Reflecting plane of the crystal-analyzer with X-ray point source

PERIODICAL: Akademiya nauk Armyanskoy SSR. Izvestiya. Fiziko-matematicheskiye nauki, v. 15, no. 1, 1962, 103-107

TEXT: The author determines theoretically the size and shape of the reflecting part of a bent crystal and a flat crystal and comes to the following conclusions: 1) The reflecting part of the surface of the curved crystal-analyzer with the point X-ray source is represented by two elliptical arcs with a common vertex. 2) In general, curvatures of the arcs are different and depend on the Bragg angle and on the radius of curvature of the crystal analyzer. 3) The reflecting part of the flat crystal analyzer with the point X-ray source is represented by a circular arc. The radius of the latter depends on the Bragg angle and on the distance of the source from the surface of the crystal. There are 5 figures and 1 Soviet-bloc reference.

Card 1/2

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

Reflecting plane of ...

S/022/62/015/001/004/007
D237/D301

ASSOCIATION: Armyanskiy sel'skokhozyaystvennyy institut, Yerevanskiy gosudarstvennyy universitet (Armenian Agricultural Inatitute, Yerevan State University)

SUBMITTED: March 23, 1961

Card 2/2

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

AKRITOV, A.G.; BEZIRGANYAN, P.A.

Dependence of the intensity of reflected X-ray waves on the dimensions of the reflecting single crystal (case of a point source). Izv. AN Arm. SSR. Ser. fiz.-mat. nauk 15 no.3:99-106 '62. (MIRA 15:9)

1. Armyanskiy Sel'skokhozyaystvennyy institut i Yerevanskiy gosudarstvennyy universitet.
(X-ray crystallography)

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

S/057/62/032/006/017/022
B108/B102

AUTHOR: Bezirganyan, P. A.

TITLE: Scattering of X rays on gases, liquids, and amorphous bodies

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 6, 1962, 753 - 758

TEXT: The intensity of X rays scattered from a small volume of gas, liquid, or amorphous body is calculated. In general it is assumed that the scattered waves are parallel at the point of observation. This assumption is justified only if the size of the reflecting planes is not greater than the size of the first Fresnel zone. In the present paper, more general calculations are carried out for a gas consisting of equal atoms which do not interact with one another. The average scattered intensity is in this case

$$\overline{J} = B|f|^2(N + N(N-1)J_1J_2J_3)$$

where $\vec{f}$ is the atomic scattering function, N is the number of atoms, $B = \frac{1}{R^2}\frac{e^4}{m^2c^4}\frac{1+\cos^2 2\chi}{2}$; R is the distance between object and observer; J_1,

Card 1/2

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

Scattering of X rays on...

J_2, and J_3 are the intensities in the three Cartesian directions of the scattering volume considered. For large angles these results agree with those of other authors (R. James, Optical principles of X-ray diffraction, 1950). The scattered intensity in this case is equal to the sum of the wave intensities scattered from the individual atoms. For zero scattering angle the present results are different from those of James, since James had assumed that in the direction of the primary beam there is no phase difference between the waves scattered from the individual atoms, and that the total scattering amplitude is equal to the sum of the individual amplitudes. However, this is the case only when the waves scattered from the individual atoms are parallel at the point of observation. The present calculations showed that the total amplitude in the case of zero scattering angle is less than the sum of the individual amplitudes. There are 3 figures.

ASSOCIATION: Yerevanskiy gosudarstvennyy universitet (Yerevan State University)

SUBMITTED: June 17, 1961

Card 2/2

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZIRGANYAN, P.A.; NINOYAN, Zh.O.

Width of diffraction maxima as dependent on the size of the crystal. Kristallografiia 8 no.3:484-485 My-Je '63. (MIRA 16:11)

1.Yerevanskiy gosudarstvennyy universitet.

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

L 12605-63 EPR/EWA(h)/EWT(1)/BDS AFFTC/ASD Ps-4 WW
ACCESSION NR: AP3000973 S/0022/63/016/003/0123/0130

AUTHOR: Bezirganyan, P. A.; Rapyan, Yu. A. 59 58

TITLE: Dependence of intensity of reflected roentgen rays 21 on the direction of the plane of incidence

SOURCE: AN ArmSSR. Izv. Seriya fiziko-matem. nauk, v. 16, no. 3, 1963, 123-130

TOPIC TAGS: roentgen rays, plane of incidence, kinematic theory, amplitude and intensity

ABSTRACT: In kinemetic theory on interference of roentgen rays in the sense of Laue, the amplitude and intensity of selectively reflected waves do not depend on the orientation of the plane of incidence in a given system of reflective planes. The authors claim that according to their more accurate computations this amplitude and intensity do depend on the orientation of the plane of incidence in a given system of reflective planes. In the particular case they treat, the dependence of intensity on the direction of the plane of incidence is stronger for the case of one plane than for the case of a system of planes, where the intensity is not always observable. The relations in the article describing intensity depend on the orientation of the plane of incidence as well as on the number of reflective

Card 1/2 Erevan State University

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZIRGANYAN, P.A.; ZAZYAN, Z.F.; AVUNDZHYAN, V.I.

Bent crystals with two radii of curvature of reflecting planes.
Zav.lab. 29 no.11:1382-1383 '63. (MIRA 16:12)

1. Yerevanskiy gosudarstvennyy universitet.

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

S/057/63/033/001/015/017
B125/B186

AUTHOR: Bezirganyan, P. A.

TITLE: The scattering of X-rays in gases, liquids and amorphous substances

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 33, no. 1, 1963, 118 - 126

TEXT: The scattering of X-rays in a gas consisting of atoms of finite dimensions is investigated, that which occurs in an ideal gas having been studied by P. A. Bezirganyan (ZhTF, 32, 753, 1962). A plane monochromatic X-ray wave, (as in the paper cited) is assumed to be incident in the direction of the unit vector $\vec{S}_0$ on monoatomic spherical molecule. The average intensity of the scattered wave amounts to $\bar{J} = B|f|^2[N + N(N-1)J_1J_2J_3 - N(N-1)V_{2\sigma}\Phi/V]$, where $\Phi(\mu, 2\sigma) = 3[\sin(\mu 2\sigma) - \mu 2\sigma\cos(\mu 2\sigma)]/(\mu 2\sigma)^3$ and $\mu = 4\pi \sin\theta/\lambda$. Further $B = (e^4/R^2m^2c^4)(1+\cos^2 2\cdot\theta)/2$, where 2θ is the scattering angle. f denotes the atom factor and $V = l_1l_2l_3$ is the volume of the irradiated gas. For spheres that are not too small

Card 1/4

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

The scattering of X-rays ...

$J = B|f|^2 N(N-\Omega\psi/V)$ where Ω is the total volume of the sphere of action of all molecules of the irradiated gas, N denotes the number of molecules of the irradiated gas, n the number of atoms in the molecule. The following conclusions may be drawn from these results: For small angles, the angular distribution of the intensity of the scattered wave depends only on the size and shape of the irradiated gas volume, and for scattering angles that are not too small it depends only on the size and shape of the atom's region of influence. The nonparallelism of the waves scattered from the different atoms of the scattering volume causes additional phase differences. Consideration of this increases the angular width of scattering in the region of small angles but does not alter the distribution of intensity for angles not small. This distribution, however, is strongly dependent on the form of the region of influence of the atom. The formula derived for the intensity of the wave scattered from multiatomic molecules is the same as that obtained by P. James (Opticheskiye printsipy diffraktsiy rentgenovskikh luchey (The optical principles of the diffraction of X-rays), ONTI, 1950). If the dimensions of the molecules are of the same order as those of the Fresnel zone (external interference effects may be neglected) one obtains for the average intensity of the scattered waves

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

S/057/63/033/001/015/017
B125/B186

The scattering of X-rays ...

$$J = BN\left\{\sum_{p=1}^{n} f_p^2 + \sum_{p\neq q}^{p\neq q} f_p f_q \times \right.$$
$$\left. \times \left[\cos A^2 \int_{-1}^{+1} \cos(Ax)^2\, dx + \right.\right.$$
$$\left.\left. + \sin A^2 \int_{-1}^{+1} \sin(Ax)^2\, dx \right]\right\}.$$

(15). If the multiatomic molecules are smaller than the first Fresnel zone the additional phase difference due to the nonparallelism of the waves may be neglected when calculating the intensity of scattering, whatever the volume of the irradiated gas. If the multiatomic molecule is equal to or larger than the first Fresnel zone the intensity of the wave scattered in the direction of the primary beam (particularly for very small angles) is strongly dependent on the dimensions of the scattering molecule. External interference effects are particularly important for liquids and gases under pressure and for sufficiently large molecular compounds. There are 4 figures.

Card 3/4

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

S/057/63/033/001/015/017
B125/B186

The scattering of X-rays ...

ASSOCIATION: Yerevanskiy gosudarstvennyy universitet (Yerevan State University)

SUBMITTED: January 29, 1962

Card 4/4

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZIRGANYAN, P.A.

Dependence of the width and intensity of a spectral line on the duration of coherent radiation of an X-ray source. Dokl. AN Arm. SSR 37 no.4:197-201 '63. (MIRA 17:8)

1. Yerevanskiy gosudarstvennyy universitet. Predstavleno chlenom-korrespondentom AN ArmSSR M.L. Ter-Mikayelyanom.

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

S/0022/64/017/001/0123/0130

ACCESSION NR: AP4026810

AUTHOR: Bozirganyan, P. A.

TITLE: Scattering of x-rays in fluids

SOURCE: AN ArmSSR. Izv. Seriya fiziko-matematicheskikh nauk, v. 17, no. 1, 1964, 123-130

TOPIC TAGS: x-ray scattering, intermolecular diffraction, phase difference, single atom fluid, small angle scattering, polyatomic fluid

ABSTRACT: A theoretical study has been made of x-ray scattering in fluids with special stress on intra- as well as intermolecular diffraction effects. The dimensions of the radiated volume are determined by the cross section of the incident x-ray beam. Hence, the author contends that one cannot neglect the auxiliary phase difference arising from nonparallel waves scattered by the different atoms of the radiated volume in the direction of the observed point. The scattering of x-rays from single atom fluids indicates a much larger angular width in the interference maxima (obtained from small angle scattering) than those observed without taking phase differences into consideration. In polyatomic fluids, with molecular dimensions less than the first Frenel zone, a second integral is obtained in the

Card 1/2

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

ACCESSION NR: AP4026810

scattering intensity expression which depends on the diffraction function Φ, where Φ is given by $\Phi(F)=\frac{\sin F - F\cos F}{F^3}$ and $F=2kr\sin\theta$, and cannot be ignored. Orig. art. has: 14 equations and 1 figure.

ASSOCIATION: Yerevanskiy gosudarstvenny*y universitet (Yerevan State University)

SUBMITTED: 05Apr63 DATE ACQ: 16Apr64 ENCL: 00

SUB CODE: PH NO REF SOV: 002 OTHER: 001

Card 2/2

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

BEZIRGANYAN, P.A.

Probability function of molecular distribution in gases, liquids, and amorphous solids. Izv.AN Arm. SSR. Ser.fiz.-mat.nauk 17 no.3: 93-101 '64. (MIRA 17:9)

1. Yerevanskiy gosudarstvennyy universitet.

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

L 16347-65 EWT(1)/T/EEC(b)-2 IJP(c)/ESD(gs)/BSD/AFWL/ASD(a)-5/ ASD(m)-3/AS(mp)-2/AFETR

ACCESSION NR: AP4049206 S/0022/64/017/005/0109/0120

AUTHOR: Bezirganyan, P. A.

TITLE: Dependence of the diffraction width of a spectral line on the dimensions of the reflecting crystal

SOURCE: AN ArmSSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, v. 17, no. 5, 1964, 109-120

TOPIC TAGS: spectrum line, line width, diffraction pattern, crystallography

ABSTRACT: Calculations are made of the width of the spectral line (Debye-Scherer ring) obtained by diffraction from a crystal in the form of a rectangular parallelepiped and an analysis of the calculation yields the following conclusions: 1. For a stationary single crystal and a plane-parallel incident beam the diffraction width of the spectral line depends only on the largest dimension of the

Card 1/2

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

L 16347-65

ACCESSION NR: AP4049206

crystal in the plane of incidence, and this is the only dimension that can be determined with the aid of these spectral lines. 2. In the case of a plane-parallel incident beam and an oscillating crystal, or in the case of a divergent beam and a stationary crystal, the diffraction width depends on the smallest dimension in the plane of incidence, and this is the only dimension that can be determined. 3. The diffraction width of the Debye-Scherrer rings depends on the smallest dimensions of the crystal in the plane of incidence, so that the diffraction width does not always yield the crystal dimensions in the direction normal to the reflecting planes. Orig. art. has: 1 figure and 28 formulas.

ASSOCIATION: Yerevanskiy gosudarstvenny*y universitet (Yerevan State University)

SUBMITTED: 17Dec63 ENCL: 00

SUB CODE: OP, SS NR REF SOV: 008 OTHER: 002

Card 2/2

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

ACCESSION NR: AP4038784 S/0048/64/028/005/0882/0884

AUTHOR: Bezirganyan, P.A.

TITLE: Dependence of the integral intensity of reflected x-rays on the duration of coherent radiation from the source /Report, Seventh Conference on X-Ray Spectroscopy hold in Yerevan 23 Sep to 1 Oct 1963/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.5, 1964, 882-884

TOPIC TAGS: x-ray, x-ray diffraction, coherent scattering

ABSTRACT: The author points out, as he appears previously to have done (Dokl.AN ArmSSR 37,197,1963), that only those planes of the diffracting crystal that can be reached by the advancing wave front during the time that the radiation remains coherent can contribute to the shape of the diffraction maximum. The changes in the usual expression for the structure factor required to take account of the finite coherence time are given. The following conclusions are drawn: 1) The assumption that the whole illuminated volume scatters coherently can lead to gross errors in calculating the integral reflection coefficient. 2) When the number of crystal planes that can be reached by the wave front during the coherence time is of the order of

Card 1/2

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

ACCESSION NR: AP4038784

the number of illuminated planes, the usual expression for the structure factor is not applicable. 3) The effect of the finite coherence time on the integral intensity of a diffraction maximum is less than its effect on the peak intensity or on the width, for the decrease of the peak intensity is compensated by the increase of the width. Orig.art.has: 3 formulas and 2 figures.

ASSOCIATION: Yerevanskiy gosudarstvenny*y universitet (Yerevan State University)

SUBMITTED: 00 DATE ACQ: 12Jun64 ENCL: 00

SUB CODE: OP NR REF SOV: 002 OTHER: 000

Card 2/2

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

ACCESSION NR: AP4009928 S/0057/64/034/001/0110/0114

AUTHOR: Bezirganyan, P.A.

TITLE: X-ray diffraction by fibrous materials

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.1, 1964, 110-114

TOPIC TAGS: x-rays, diffraction, x-ray diffraction, x-ray fibre diffraction, Fresnel diffraction, fibrous material, filamentary material

ABSTRACT: It is pointed out that the usual calculation with the aid of the reciprocal lattice of the intensity distribution of x-rays diffracted by a fibrous or filamentary material does not take account of the phase differences due to the different distances of the various lattice points on the axis of the fibre from the point of observation. The diffraction intensity distribution is accordingly calculated in real space, with these phase differences taken into account, and the results are compared with those of the usual reciprocal lattice calculations. The diffraction intensities are specifically calculated for a material with fibres of arbitrary length having parallel axes but random orientations in azimuth. The fibres themselves are assumed to be two atoms wide in one direction and one atom wide in

Card 1/2

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"

"APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7

ACC.NR: AP4009928

the other. The diffraction intensity calculated with the aid of the reciprocal lattice is proportional to the square of the length of the fibre. In the real space calculations, the length of the fibre is replaced by the corresponding Fresnel integral. In this case, therefore, the diffraction intensity, after an initial increase approximately as the square of the fibre length, becomes oscillatory and remains finite as the fibre length increases without limit. It is shown that, contrary to a previous assertion of the author (P.A.Bezirganyan,ZhTF,32,No.6,1962),the diffraction intensities calculated above are valid only in the equitorial plane. Expressions are derived for the diffracted intensities in other planes. Orig.art. has: 16 formulas and 6 figures

ASSOCIATION: Yerevanskiy gosudarstvenny*y universitet (Yerevan State University)

SUBMITTED: 16Dec62 DATE ACQ: 10Feb64 ENCL: 00

SUB CODE: PH NR REF SOV: 003 OTHER: 000

Card 2/2

APPROVED FOR RELEASE: 06/08/2000 CIA-RDP86-00513R000205210004-7"